INTERNATIONAL SEARCH REPORT

C (Continuation)   DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 95/06917 A (EQUITRADE INFORMATIONS SYSTEMS CORPORATION) 9 March 1995 See the whole document, especially pages 10 and 11	1-20
A	EP 434224 A2 (REUTERS LIMITED) 26 June 1991 See the whole document	1-20
A	US 4903201 A (WAGNER) 20 February 1990 See the whole document	1-20
A	US 4831526 A (LUCHS et al) 16 May 1989 See the whole document	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member			
WO	9428496	AU	40544/93	EP	701717	GB	2294141
WO	9605563	AU	35313/95	GB	2294788		
WO	9506917	AU	76442/94	CA	2170768	EP	722593
		US	5500793				

END OF ANNEX

Applicant's or agent's file reference 302408C:RMM	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).

International application No. PCT/AU 96/00420	International filing date 5 July 1996	Priority Date 7 July 1995

International Patent Classification (IPC) or national classification and IPC

Int. Cl.⁶   G06F 17/60

Applicant

     SHEPHERD, Ian Kenneth

1.   This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2.   This REPORT consists of a total of   5   sheets, including this cover sheet.

    [ ]   This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

    These annexes consist of a total of   sheet(s).

3. This report contains indications relating to the following items:

   I   [X]   Basis of the report

   II   [ ]   Priority

   III   [ ]   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   IV   [X]   Lack of unity of invention

   V   [X]   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   VI   [X]   Certain documents cited

   VII   [ ]   Certain defects in the international application

   VIII   [ ]   Certain observations on the international application

Date of submission of the demand 21 January 1997	Date of completion of the report 9 April 1997
Name and mailing address of the IPEA/AU AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. (06) 285 3929	Authorized Officer R.W.J. FINZI Telephone No. (06) 283 2213

Form PCT/IPEA/409 (cover sheet) (January 1994)copkaj

I. , Basis of the report

1. This report has been drawn on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

☐ the international application as originally filed.

☒ the description,   pages   1, 2, 5-38, 40-46, 48-52, as originally filed,

                 pages   , filed with the demand,

                 pages   3, 4, filed with the letter of   5 March 1997,

                 pages   39, 47, filed with the letter of   27 March 1997.

☒ the claims,   Nos.   2-8, 12-18, as originally filed,

                 Nos.   , as amended under Article 19,

                 Nos.   , filed with the demand,

                 Nos.   1, 9-11, 19, 20, filed with the letter of   5 March 1997,

                 Nos.   , filed with the letter of   .

☒ the drawings,   sheets   1-6, as originally filed,

                 sheets/fig   , filed with the demand,

                 sheets/fig   , filed with the letter of   ,

                 sheets/fig   , filed with the letter of   .

2. The amendments have resulted in the cancellation of:

☐ the description,   pages

☐ the claims,   Nos.

☐ the drawings,   sheets/fig

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

☐ restricted the claims.

☐ paid additional fees.

☐ paid additional fees under protest.

☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

☒ complied with.

☐ not complied with for the following reasons:

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

☒ all parts.

☐ the parts relating to claims Nos.

V.   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Statement

Novelty (N)	Claims	1-20	YES
	Claims		NO
Inventive step (IS)	Claims	1-20	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims		NO

Citations and explanations

NOVELTY (N) AND INVENTIVE STEP (IS)

(1)   WO 94/28496 A (SHEPHERD) 8 December 1994

(2)   WO 95/06917 A (EQUITRADE INFORMATIONS SYSTEMS CORPORATION) 9 March 1995

(3)   EP 434224 A2 (REUTERS LIMITED) 26 June 1991

(4)   US 4 903 201 A (WAGNER) 26 February 1990

(5)   US 4 831 526 A (LUCHS et al.) 16 May 1989

None of these citations, individually or collectively disclose the invention as claimed.

The closest prior art, that of WO 94/28496 (SHEPHERD) discloses a data processing system to enable the emulation of multi-party risk management contracts. The system includes data processing means that is operable to price and match a contract from contract data and registering data.

The registering data for each outcome represents a probability of that outcome eventuating at the date of maturity, lu a counter-consideration is calculated by element multiplication of entitlements and the respective probability, all summed over a predetermined range, and adjusted at least to calculate the present day value thereof.

The matching process determines which counterparty will provide the best element on maturity. There is no disclosure of an investment system as claimed, nor of the pricing and matching procedures used.

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO 96/18160	13 June 1996	7 December 1995	7 December 1994
WO 96/05563	22 February 1996	17 August 1995	17 August 1994

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)

Summary of the Invention

In one form, the invention discloses a data processing system to enable the formulation of multi-party investment contracts, the system comprising:

5   input means by which an ordering party can input contract data relating to at least one phenomenon, each said phenomenon having a range of future outcomes and a future time of maturity, the contract data including a set of probabilities of occurrence for each outcome in said range and a consideration due to a counterparty at or after the time of matching, and further by which at least one counterparty can input registering

10   data including a set of probabilities of occurrence for each outcome in said range; and

data processing means operable to price and match a contract for a said phenomenon from said contract data and said registering data, the pricing including:

applying at least one template of entitlement as a function of outcome to each counterparty's set of probabilities to give one or more

15   individual counterparty prices each equal to the ordering party's consideration; and

applying the ordering party set of probabilities to each said template to derive an implied entitlement;

the matching including:

20   determining which counterparty will provide the best entitlement on maturity by comparing each implied entitlement with the consideration; and

matching the contract with that counterparty having the template for the best said comparison.

25   Preferably, in the pricing, application of a template results in the multiplication of each elemental entitlement with each probability and the summing of the products. Further, a discount factor is applied to the sum to give a present day price relative to the time of maturity.

In the matching, each template is applied to the ordering party set of probabilities, and a multiplication of the elemental entitlements with each probability performed, and the products summed to give the implied entitlement.

The said sum can have a discount rate applied to give a present day value relative to the time of maturity. The ordering party discount rates can be different between different types of counterparties.

The contract data can further include a minimum expected entitlement against which the counterparty prices are compared for the purpose of accepting ones thereof for the matching.

The invention further discloses a method for the formulation of multi-party investment contracts, the method comprising the steps of:

inputting ordering party contract data relating to at least one phenomenon, each said phenomenon having a range of future outcomes and a future time of maturity, the contract data including a set of probabilities of occurrence for each outcome in said range and a consideration due to a counterparty at or after the time of matching;

inputting counterparty registering data including a set of probabilities of occurrence for each outcome in said range; and

pricing and matching a contract for a said phenomenon from said contract data and said registering data, said step of pricing, for each counterparty, including:

applying at least one template of entitlement as a function of outcome to the set of probabilities to give one or more individual counterparty prices; and

applying the ordering party set of probabilities to each individual counterparty template to derive an implied entitlement;

said step of matching including:

determining which counterparty will provide the best entitlement on maturity by comparing the implied entitlements with the consideration;

and matching the contract with the counterparty having the template for the best said comparison.

CLAIMS:

1.   A data processing system to enable the formulation of multi-party investment contracts, the system comprising:

5   input means by which an ordering party can input contract data relating to a least one phenomenon, each said phenomenon having a range of future outcomes and a future time of maturity, the contract data including a set of probabilities of occurrence for each outcome in said range and a consideration due to a counterparty at or after the time of matching, and further by which at least one counterparty can input registering

10   data including a set of probabilities of occurrence for each outcome in said range; and

data processing means operable to price and match a contract for a said phenomenon from said contract data and said registering data, the pricing including:

applying at least one template of entitlement as a function of outcome

to each counterparty's set of probabilities to give one or more

15   individual counterparty prices each equal to the ordering party's

consideration; and

applying the ordering party set of probabilities to each said template to

derive an implied entitlement;

the matching including:

20   determining which counterparty will provide the best entitlement on

maturity by comparing each implied entitlement with the

consideration; and

matching the contract with that counterparty having the template for

the best said comparison.

25

2.   A data processing system as claimed in claim 1, wherein, in the pricing, application of a template results in the multiplication of each elemental entitlement with each probability, and the summing of the products.

9. A data processing system to enable the formulation of potential multi-party investments contracts, the system comprising:

input means by which an ordering party can input contract data relating to a least one phenomenon, each said phenomenon having a range of future outcomes and a future time of maturity, the contract data including a set of probabilities of occurrence for each outcome in said range and a consideration due to a counterparty at or after the time of matching, and further by which at least one counterparty can input registering data including a set of probabilities of occurrence for each outcome in said range; and

data processing means operable to price a contract for a said phenomenon from said contract data and said registering data, the pricing including:

applying at least one template of entitlement as a function of outcome to each counterparty's set of probabilities to give one or more individual counterparty prices each equal to the ordering party's consideration; and

applying the ordering party set of probabilities to each said template to derive an implied entitlement.

10. A data processing system to enable the formulation of potential multi-party investments contracts, the system comprising:

input means by which an ordering party can input contract data relating to a least one phenomenon, each said phenomenon having a range of future outcomes and a future time of maturity, the contract data including a set of probabilities of occurrence for each outcome in said range and a consideration due to a counterparty at or after the time of matching, and further by which at least one counterparty can input registering data including a set of probabilities of occurrence for each outcome in said range; and

data processing means operable to price and match a contract for a said phenomenon from said contract data and said registering data, the pricing including:

dividing the consideration into integer components, and for each component:

applying at least one template of entitlement as a function of outcome to each counterparty's set of probabilities to give one or more

5 individual counterparty prices each equal to the ordering party's component consideration; and

applying the ordering party set of probabilities to each said template to derive an implied component entitlement;

the matching including:

10 determining which counterparty will provide the best entitlement on maturity by comparing each implied component entitlements with the consideration; and

matching the contract with the counterparties having the templates for the best said component comparisons.

15

11.   A method for the formulation of multi-party investment contracts, the method comprising the steps of:

inputting ordering party contract data relating to at least one phenomenon, each said phenomenon having a range of future outcomes and a future time of maturity, the

20 contract data including a set of probabilities of occurrence for each outcome in said range and a consideration due to a counterparty at or after the time of matching;

inputting counterparty registering data including a set of probabilities of occurrence for each outcome in said range; and

pricing and matching a contract for a said phenomenon from said contract data

25 and said registering data, said step of pricing, for each counterparty, including:

applying at least one template of entitlement as a function of outcome to the set of probabilities to give one or more individual counterparty prices; and

further including the step of comparing the minimum expected entitlement against the counterparty prices to accept ones thereof for the step of matching.

17.   A method as claimed in any one of claims 12 to 16, whereby the contract data includes a constraint on the one or more templates applied in the step of giving the individual counterparty prices.

18.   A method as claimed in any one of claims 11 to 17, comprising the further step of periodically repricing the contract data for a matched contract to derive one or more implied entitlements for one or more counterparties.

19.   A method for the formulation of potential multi-party investments contracts, the method comprising the steps of:

inputting ordering party contract data relating to at least one phenomenon, each said phenomenon having a range of future outcomes and a future time of maturity, the contract data including a set of probabilities of occurrence for each outcome in said range and a consideration due to a counterparty at or after the time of matching;

inputting counterparty registering data including a set of probabilities of occurrence for each outcome in said range; and

pricing a potential contract for a said phenomenon from said contract data and said registering data, said step of pricing, for each counterparty, including:

applying at least one template of entitlement as a function of outcome to the set of probabilities to give one or more individual counterparty prices; and

applying the ordering party set of probabilities to each individual counterparty template to derive an implied entitlement.

20.   A method for the formulation of multi-party investment contracts, the method comprising the steps of:

inputting ordering party contract data relating to at least one phenomenon, each said phenomenon having a range of future outcomes and a future time of maturity, the contract data including a set of probabilities of occurrence for each outcome in said range and a consideration due to a counterparty at or after the time of matching;

5   inputting counterparty registering data including a set of probabilities of occurrence for each outcome in said range; and

pricing and matching a contract for a said phenomenon from said contract data and said registering data, said step of pricing, for each counterparty, including:

dividing the consideration into integer components are for each component;

10   applying at least one template of entitlement as a function of outcome to the set of probabilities to give one or more individual counterparty prices; and

applying the ordering party set of probabilities to each individual counterparty template to derive an implied component entitlement;

said step of matching including:

15   determining which counterparty will provide the best entitlement on maturity by comparing the implied component entitlements with the consideration; and

matching the contract with the counterparty having the templates for the best said component comparisons.

CHART A14

APPLICATION ID: 001
PRODUCT ID: 10061

PRIMARY ORDER MATCHING

AS AT 95.01.01.17.38.07.00

Counterparty Contingent Entitlement Payout (A$)

Feasible Product Values	Ordering Party Assessed Probabilities of Occurrence	Abrahamsons' Offers				Carpenters' Offers			
		No 1	No 2	No 3	No 4	No 1	No 2	No 3	No 4
<									
1600	0.000020	187,200	188,200	187,200	188,200	185,000	186,000	185,000	186,000
:::	:::	:::	:::	:::	:::	:::	:::	:::	:::
1920	0.000224	187,200	188,200	187,200	188,200	185,000	186,000	185,000	186,000
1930	0.000183	187,200	163,073	187,200	188,200	163,920	161,240	185,000	186,000
1940	0.000153	162,240	137,946	187,200	188,200	142,840	136,480	185,000	186,000
1950	0.000123	137,280	112,820	187,200	37,440	121,760	111,720	185,000	37,440
1960	0.000089	112,320	87,693	37,440	37,440	100,680	86,960	185,000	37,440
1970	0.000063	87,200	62,566	37,440	37,440	79,600	62,200	185,000	37,440
1980	0.000049	62,400	37,440	37,440	37,440	58,520	37,440	185,000	37,440
1990	0.000038	37,440	37,440	37,440	37,440	37,440	37,440	:::	37,440
:::	:::	:::	:::	:::	:::	:::	:::	:::	:::
2200	0.000028	37,440	37,440	37,440	37,440	37,440	37,440	37,440	37,440
>									**
Expected Return PV *:		55,226	56,210	55,900	57,312	54,120	55,111	54,914	56,213
Investment:		51,920	51,920	51,920	51,920	51,920	51,920	51,920	51,920
Net Return:		3,306	4,290	3,980	5,392	2,200	3,191	2,994	4,293

* Expected Return PV = Present value of sum [Ordering party's assessed probabilities of occurrence x Counterparty's contingent entitlement payout offer] at discount rate of 11% per annum.

** All offers satisfy Abbotts & Taylor's minimum expected return (PV) of A$54,000.

CHART B8

PRIMARY ORDER MATCHING

AS AT 95.01.01.17.38.07.00

APPLICATION ID: 001

PRODUCT ID: 10061

Feasible Product Values	Ordering Party Assessed Probabilities of Occurrence	Counterparty Contingent Entitlement Payout (A$)	
		Abrahamsons' Offer	Carpenter Inc's Offer
∨			
1600	0.000020	57,280	57,860
::	::	::	::
1920	0.000224	57,280	57,860
1930	0.000183	57,280	57,860
1940	0.000153	57,280	57,860
1950	0.000123	57,280	57,860
1960	0.000089	57,280	57,860
1970	0.000063	57,280	57,860
1980	0.000049	57,280	57,860
1990	0.000038	57,280	57,860
::	::	::	::
2200	0.000028	57,280	57,860
∧			

Expected Return PV *:		42,730	43,164 **
Investment:		51,920	51,920
Net Return:		(9,190)	(8,756) ***

* Expected Return PV = Present value of sum [Ordering party's assessed probabilities of occurrence x Counterparty's entitlement payout offer] at discount rate of 11% per annum.

** Neither offer satisfies Abbotts & Taylor's minimum expected return (PV) of A$54,000.

*** Neither offer satisfies Abbott & Taylor's requirement of a positive net return.